

# Georeferencing in Google Earth

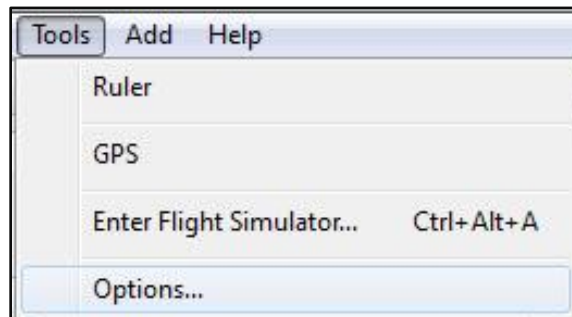
Objective: overlay an image in Google Earth to use for mapping purposes

## Installing Google Earth

- Go to <https://www.google.com/earth/>
- Basic version (Free, no account required)
  - Click “Google Earth”
  - Click “Desktop”
  - Click “Download Google Earth”
  - Click “Agree and Download” after reading the privacy policy
  - Install Google Earth
- Pro version (Free, Google account required)
  - Click “Google Earth Pro”
  - Click “Download Google Earth Pro”
  - Click “Agree and Download” after reading the privacy policy
  - Install Google Earth Pro. When it asks for a key, use “GEPFREE”

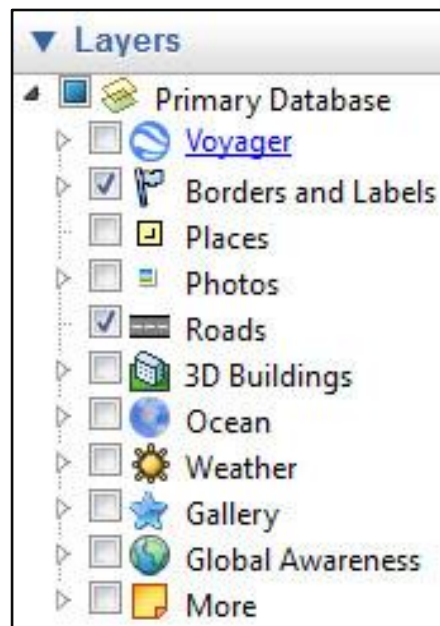
## Google Earth Settings and Navigation

- Recommended settings in Google Earth
  - Go to “Tools” at the top and then select “options” (see image below).



- 3D View Tab
  - Under “Show Lat/Long” select the coordinate system you want to use (if needed).
  - Under “Units of Measurement” select the measurement system you want to use.
  - Under “Terrain” we recommend you deselect “Use 3D Imagery.”

- Navigation Tab
  - Under “Navigation” select “Do not automatically tilt while zooming.”
- Feel free to experiment with other settings to create the map you want!
- Close options. On the left there is a “Layers” section (see image on the right). We recommend you only have “Borders and Labels” and “Roads” checked.
  - Click the arrow to the left of a layer to see more options.
- Useful hotkeys
  - U – Moves the map to plan view (Or to get out of tilt view).
  - N – Orients the map north.
- Find the area of the image you need to georeference (there are a few ways to do this).
  - The search bar
    - In the search bar on the top left (see image below) enter the name or address of the area you are looking for (i.e. Utah, Salt Lake City, or 300 S Rio Grande St). Be as specific as possible.



- Pan and Zoom
  - Left-click the mouse to move the map. Use the scroll wheel to zoom in and out.
  - You may also use the buttons on the top right to pan and zoom (see image at the right).
    - Click the “N” to orient the map north.
    - Click and hold around the eye to change the orientation.
    - Click and hold the hand symbol to pan the map.
    - Click the “+” or “-” to zoom in or out.

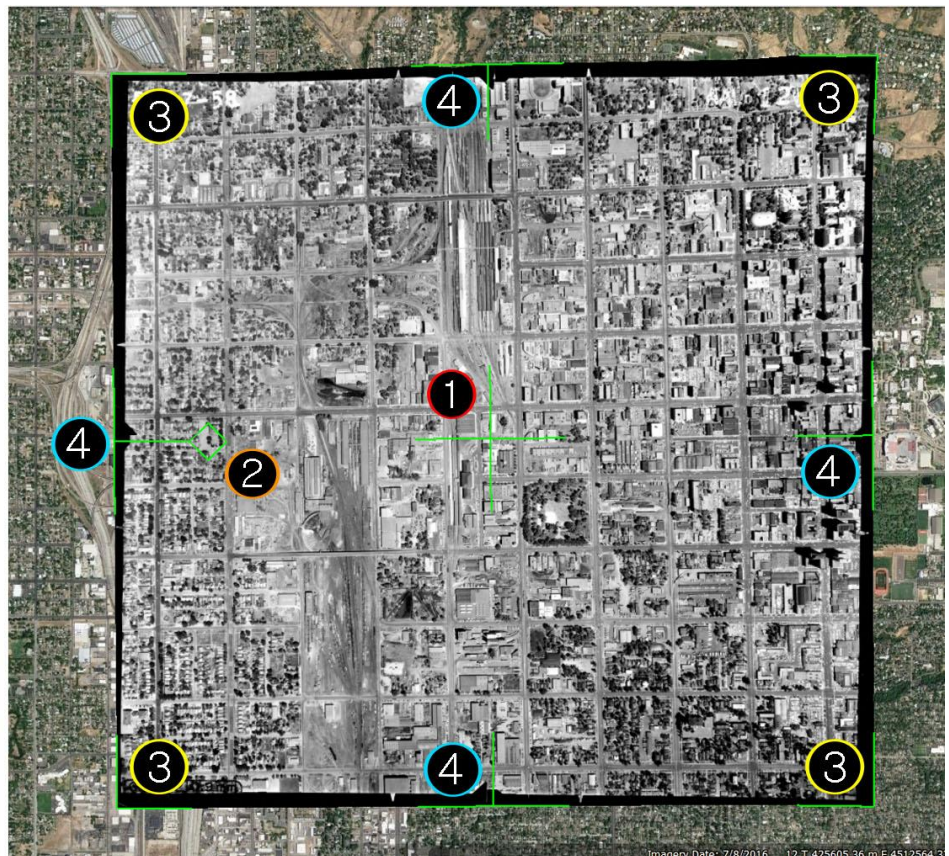


## Georeferencing an image

- Please note: cropping an image down to only the needed area will make georeferencing much easier. This must be done prior to adding the image to Google Earth (cropping can be done in Microsoft Paint, Photoshop, GIMP, or other image editing software).
- Click “Add Image Overlay” (see image to the right).
  - Name the layer.
  - Select “Browse...” to the right of “Link.”
    - Select the image you want to use from your computer files.
  - Keep this window open while georeferencing. If you close this window you can open it again by right-clicking the layer under “My Places” and selecting “properties.”
- Georeferencing
  - Use the green lines on the image to manipulate it (see image below).



- 1 The green cross-hair will move the entire image around.
- 2 This diamond will rotate the image.
- 3 These corners will resize the image diagonally. Hold shift before clicking to keep the image proportions.
- 4 These sides will only move the edge of the image and will distort the proportions.



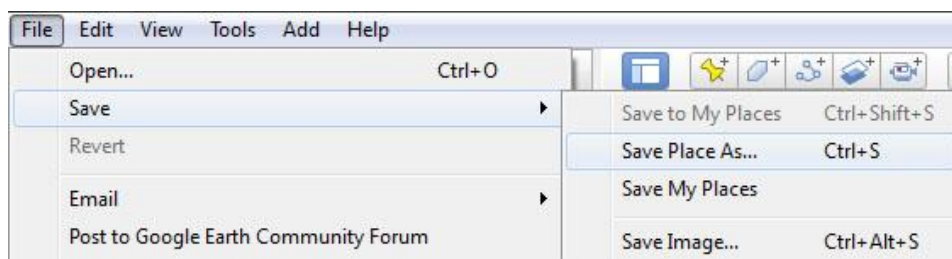
- Use the transparency bar in the image properties window to compare the image with the base map.



- If roads are present in your image line them up with the roads in Google Earth first.
  - If roads are not present use easily distinguishable landmarks.
- When the image is generally lined up zoom in and use buildings, creeks, etc. to fine-tune the georeference. You can turn the 3D buildings layer on to help with this step (Roads change over time and are not ideal for fine-tuning).
- When finished click “OK” in the properties window.

### Saving the georeferenced image

- To save the image for export (if needed) make sure the image name is highlighted under “Places.”
- Click the “File” tab, then “Save” and then “Save Place As...”

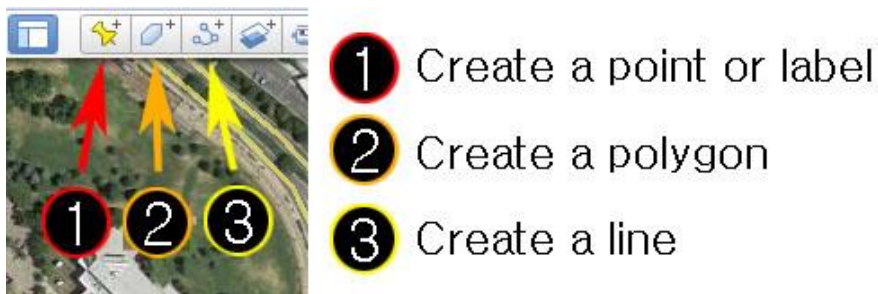


- Make sure “Save as type” is set to “Kml (\*.kml)” and save the file in the desired area on your computer.
  - Please note: this file can be added to an ArcGIS online account under “My Content.” Images must be smaller than 10 MB to be uploaded to ArcGIS online. Features can be drawn here if you do not wish to use Google Earth (see the ArcGIS Online tutorial for more information).
- To save the entire map as is go to “File” > “Save” > “Save My Places.”

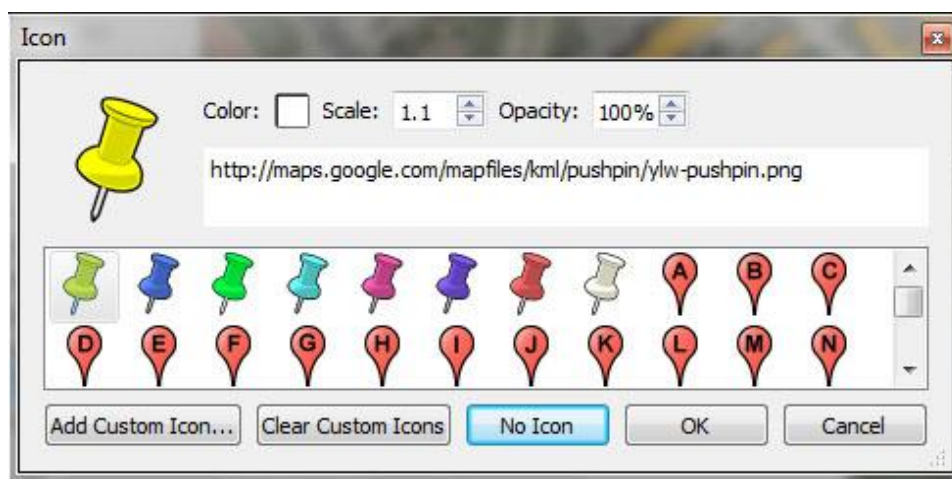


## Drawing Features in Google Earth



- To begin drawing a feature you first select the desired shape from the toolbar. Points, lines, and polygons are available (see image below).

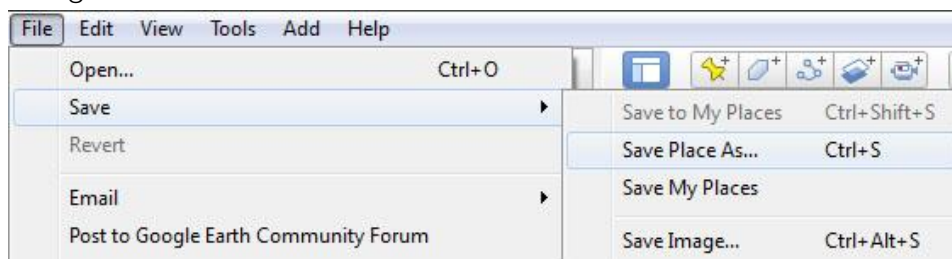


- Adding a point or label (called a “placemark” in Google Earth).
  - Click the thumbtack image in the toolbar.
  - Enter the layer name.
  - A yellow crosshair shows the location of the point. Move this crosshair to place the point.
  - To change the point symbol click the button to the right of “name.” It will match the current symbol of the point. The window below will pop up.



- Changing the symbol (skip this step if you do not want a symbol).
  - Select the desired symbol from the list.
  - Click the box to the right of “color” to change the symbol color. Use the arrows to the right of “scale” to change the size of the symbol. Use the arrows to the right of “opacity” to change the symbol’s transparency.
- If you only want a label and no symbol click “No Icon” at the bottom of the icon window. If you want to change the location of the label you will need to select a symbol before it will allow you to change the location. Select “No Icon” again to remove the symbol when you find the right spot.

- Adding a polygon.
  - Click the polygon symbol in the toolbar. 
  - Enter the layer name (the name will not show up in the map).
  - Draw a polygon by clicking each corner needed on the map.
  - To change the color of the polygon click the “Style, Color” tab in the polygon window.
    - Click the box to the right of “color” to change the polygon color. Click the arrows to the right of “opacity” to change the transparency of the polygon.
  - To make the polygon appear above the image overlay click the “altitude” tab in the polygon window.
    - Click “clamped to ground” and select “relative to ground”. In the “Altitude” box enter a 3 (or any height you wish to use). The polygon will now be above the image overlay.
  - If you need a label for this polygon on the map you will need to create a point with no icon.
- Adding a line.
  - Click the line icon in the toolbar (called a “path” in Google Earth). 
  - Enter the layer name.
  - Draw the line by clicking each line end or corner on the map.
  - To change the line’s appearance go to the “Style, Color” tab in the path window. Change the color, width, and opacity by selecting the options to the right of each.
  - If you need a label for this line on the map you will need to create a point with no icon.
- Exporting a feature.
  - Select the feature you wish to export in the “Places” section on the left.
  - Navigate to “File” > Save > Save Place As...



- - Make sure “Save as type” is set to “Kml (\*.kml)” and save the file in the desired area on your computer.

For tutorials on more advanced Google Earth features go here:

<https://www.google.com/earth/learn/>